

WHAT IS CLAIMED IS:

1. A spread-spectrum signal receiver apparatus for receiving a spread-spectrum signal and demodulating transmit data from the signal, comprising:

- 5           a receive unit for receiving a spread-spectrum signal that has been spread by a spreading code comprising a combination of a first code that varies depending upon spreading factor and a second code that differs for every user;
- 10           an interference canceller for producing a replica of an interference signal from the receive signal using a despreading code comprising a combination of the first code, which is regarded as a code decided based upon a minimum spreading factor, and the second code that
- 15           differs for every user, and generating a signal obtained by subtracting the replica from the receive signal; and
- a demodulator for demodulating transmit data, from the signal from which the replica has been subtracted, by despread processing using a spreading code on the
- 20           transmit side.

2. The apparatus according to claim 1, wherein said interference canceller includes:

- a despreaders for despreading the receive signal using a despreading code comprising a combination of at
- 25           least the first code decided based upon the minimum spreading factor and the second code that differs for every user;

            a demodulator for demodulating transmit data from

the despread signal;

an attenuator for multiplying the demodulated transmit data by a prescribed damping coefficient; and

a spreader for generating the replica by spreading  
5 the attenuated transmit data using a code identical with the desreading code.

3. The apparatus according to claim 1 or 2, wherein the first code decided by the spreading factor is obtained by systematically varying a code that conforms to the  
10 minimum spreading factor.

4. An interference cancellation apparatus for receiving a spread-spectrum signal that has been spread by a spreading code comprising a combination of a first code that varies depending upon spreading factor and a second  
15 code that differs for every user, and generating a replica of an interference signal from the receive signal, comprising:

a receiver for receiving the spread-spectrum signal; and

20 a replica producing unit for producing a replica of the interference signal from the receive signal using a desreading code comprising a combination of the first code, which is regarded as a code decided based upon a minimum spreading factor, and the second code that  
25 differs for every user.

5. The apparatus according to claim 4, wherein said replica producing unit includes:

a despreader for desreading the receive signal

using the despreading code comprising a combination of the first code and the second code that differs for every user;

5 a demodulator for demodulating transmit data from the despread signal;

an attenuator for multiplying the demodulated transmit data by a prescribed damping coefficient;

10 a spreader for generating the replica by spreading the attenuated transmit data using a code identical with the despreading code.

6. The apparatus according to claim 5, further comprising a damping-coefficient altering unit for setting the damping coefficient to zero upon detecting that data is not being transmitted.

15 7. The apparatus according to claim 5, further comprising a damping-coefficient altering unit for altering a damping coefficient of a data channel based upon the ratio of receive-signal power of the data channel to receive-signal power of a control channel,  
20 wherein the data and control channels are included in the receive signal.

8. The apparatus according to claim 4, wherein said replica producing unit includes:

25 a first despreader for despreading a receive signal using the despreading code comprising the combination of the first code, which is regarded as a code decided based upon a minimum spreading factor, and the second code that differs for every user;

a spreading-factor estimation unit for estimating the spreading factor SF on the transmit side;

a second despreader for generating a despread signal of the receive signal by integrating, m times,  
5 the result of desreading, which is output from said first despreader, based upon the desreading code conforming to the minimum spreading factor, where m (an integer) represents the ratio of the estimated spreading factor to the minimum spreading factor;

10 a demodulator for demodulating the transmit data from the despread signal;

an attenuator for multiplying the demodulated transmit data by a prescribed damping coefficient; and

a spreader for generating the replica by spreading  
15 the attenuated transmit data using a code identical with the desreading code.

9. The apparatus according to claim 8, wherein said spreading-factor estimation unit estimates the spreading factor based upon the ratio of receive-signal power of a  
20 data channel to receive-signal power of a control channel, wherein the data and control channels are included in the receive signal.

10. The apparatus according to claim 8, further comprising a damping-coefficient altering unit for  
25 setting the damping coefficient of a data channel to zero upon detecting that data is not being transmitted on the data channel.

11. The apparatus according to claim 8, further

comprising a damping-coefficient altering unit for altering a damping coefficient of a data channel based upon the ratio of receive-signal power of a data channel to receive-signal power of a control channel.